

Optometry versus Medicine in Nervous Diseases

Increase in Nervous Disorders—The Eye and the Nervous System—Instructive Illustrative Cases—A Fruitful Field for Optometrical Research

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The argument that the optometrist is uneducated and that "the profound relation existing between ocular fatigue and grave neurological disturbances is to these people as a sealed book" is the campaign opposition of medical societies to optometrical legislation. Careful study of unsealed books treating on the subject of neurology fail to show that medical treatment of today is any more efficacious than that of the remotest past. The list of nervous disorders is a long one, and has for centuries been the despair and reproach of medical men. They know a good deal about acute diseases and have largely decreased the death rate from these, but the causes of nervous disorders have been shrouded in mystery and remains with them an unsolved problem.

Our strenuous life, high living and self-indulgence are said to be the causes underlying all sorts of disturbances of mind and body, but it seems inconsistent to charge all to these causes in view of the fact that we are living in a more enlightened age, know the value of hygiene and have government inspection of water, milk, meat and vegetables.

Alarming Statistics

Statistics show an alarming increase in alcoholism and drug habit, insanity, suicides and chronic diseases. What is the remedy? Aren't the doctors the ones who ought to be able to cure these conditions? An official of the Massachusetts State Hospital for Inebriates related a case in that institution of a man who had been a minister and had been a chaplain in the navy, and who had never touched a drop of liquor until past thirty years of age. On careful study of this case it was found that at regular periods this man had a nervous attack that required the services of a physician. This statement is in keeping with the theory that habitual drunkenness and drug indulgence is the result of nervousness. It is well known that the relationship of alcohol to insanity is very

close, indeed. In acute intoxication it is the highest parts of the nervous system that suffer most severely.

Society confesses a humiliating impotence when it says frankly, "We can do nothing for that man except to kill him or lock him up behind bars." Insanity has increased 300 per cent in fifty years in the United States. The annual cost of maintenance of the insane in public hospitals approximated twenty-one million dollars. In New York state the proportion of insane at the present time is 3,750 to the million, more than six times the proportion fifty years ago.

The census estimated the feeble-minded in the general population to be 150,000. Three-fifths of this class in public institutions are epileptic. Insanity is the principal cause for suicide, which has increased 50 per cent in seven years. Epilepsy, chorea, hysteria, rheumatism, asthma, hay fever and gout are among the other nervous disorders of unknown origin.

The story is told of a missionary who visited some Indians and explained the Christian theology, with considerable emphasis on the final state of the unredeemed. The chief showed considerable skepticism, and with an arrow he drew a small circle in the sand, then a larger one enclosing the first. Pointing to the inner circle, "This what Indian know;" pointing to the outer circle, "This what white man know." Then, sweeping the arrow outside the periphery of the larger circle, "Out here Indian know just as much as white man."

The Optometrist's Opportunity

With the hope that the education and usefulness of the optometrist may be an ever-widening circle, and that the honor and credit of a most important discovery may rest with the profession of which I claim to be an humble representative, and that it may prove so valuable to mankind as to forever silence further criticism, I beg to contribute certain observations based on the application of physical law that has thus

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far apparently escaped the attention of all students of human nervousness. I make no claim for superior educational attainments, but having had exceptional opportunity as an employee of the Waltham Watch Company to acquire expert mechanical knowledge of adjustments, escapements and balance poise, and many years' experience in the study of motion and force, cause and effect, I had excellent preparation for the more intricate study of the subtle forces that enter into the comfort and equilibrium of the human mechanism.

In my early study of optics I became interested in binocular vision and developed a system of exercises of the extrinsic muscles for the relief of headache. I met with gratifying success, and obtained relief also for various nervous disorders. Realizing the importance of this, I extended my investigations and have completed almost ten years of hard work. I have found, and it is original with myself, that when the eyes are out of alignment in certain directions nervous disorders of various kinds are manifest. Balance of the eye muscles by exercise removed all traces of these disturbances.

For many years I was at a loss to understand the peculiarity of direction. I then learned that Marconi had found a difference in the effect of ether waves in wireless telegraphy in the matter of direction, and concluded that I had here found by analogy the solution of the puzzle, namely, that there is a specific direction to the waves of light in the ether as applied to vision. I have no doubt that when the eyes are out of position in this direction the effect is abnormal, the waves are increased or doubled, and hence become an overstimulation of nervous elements in the visual centers. The incessant impacts of this irritation upon this center may lead to overleaping or shunting of these forces to neighboring or remote nerve centers, and thus cause by either stimulation or exhaustion a depreciation of the nervous system that may result in mental or organic derangement.

The importance of this discovery can not be estimated, for it explains the fundamental cause of nervousness. A reasonable explanation for the increase of all nervous disorders, I believe, is to be found in the increase of artificial illumination and close use

of the eyes plus imbalance of the muscles of the eyes. Our fathers knew nothing of electric light and were free from its stimulating effect on the nervous system.

What Is Light?

Light is due to electro-magnetic vibrations in the ether. If a candle was sufficient in olden times, think of the increased candle-power in present use that is force enough to practically bruise the delicate organs of vision. It is a matter of common observation that the yellow spot, the most sensitive part of the retina, is oval in shape in the horizontal direction and that the retina is devoid of interfering vessels in this, the axis of vision.

Anatomy teaches us that the retina has a series of horizontal cells whose function is unknown, but probably act as association fibers to the visual cells. In view of other facts that indicate a particular direction of the ether waves, this arrangement seems confirmatory. We are told that the brain contains two thousand million cells, that the retina is an extension of the brain, and through the eyes is in contact with the outside world. Thus the action of light is direct, for the ether fills all space. Prof. A. P. Mathews, of Chicago University, in extended study on the nature of a nerve impulse, says that the ultra-violet or very short ether waves stimulate protoplasm, that chemical stimulation and stimulation by light are identical, that muscle contraction is probably in its essence an electrical phenomenon and that the conduction of a nerve impulse is almost certainly an electrical phenomenon.

Optics and Electricity

Sir Oliver Lodge says, "Optics is a branch of electricity." Brain force corresponds to the electric current. Nerve force, vital energy, even thought and emotions, are in some inscrutable way the production of brain cells, or at least associated with the vibration of brain cells. The brain is the dynamo which supplies the whole system with nervous energy and thinking. It is not too much to say that perfect balance of the ocular muscles and entire harmony of movement and action are absolutely necessary for the unstrained reception of light force. Otherwise, the brain is under constant irri-

tation every moment of the time that the eyes are open, the amount and variation of this disturbance varying with the individual. Considering the retinas as transformers of this force, perfect balance of the eye muscles means normal reception and distribution of these forces in the brain and gravity centers of the body.

As I write a few cases are brought to mind. One is that of a boy in one of the public schools of the city who was considered feeble-minded and was examined by an alienist under direction of the school authorities. He was found deficient and unfit to continue at school, and recommendation was made that he be sent to the state institution, and the mother was so notified. The teacher was prompted to take up the exercise treatment, with the result that the child showed remarkable improvement, and is now of average intelligence and is considered normal. The conclusion in this case is that the child was born with normal brain, but with a muscular defect of the eye muscles; that the first ray of light that entered those eyes began a disturbance that interfered with proper function of the brain, while removal of this disturbance allowed the brain to do its work properly.

Illustrative Case

Another case is that of an insane woman who for two years was so depressed as not to take notice or interest in anything going on about her. She was put under the exercise treatment and showed prompt and permanent improvement, and is now and has been for three years perfectly sane and rational.

A third case is that of a man who had in two years lost thirty-one weeks from work on account of acute indigestion. Medical treatment as well as dieting was of no avail. An examination showed imbalance of the eye muscles, and exercise was resorted to. Immediate relief was obtained, with no return of the trouble. It is to be remembered that all nerve force is spent upon the muscles, and this force is furnished by the brain. If the brain is disturbed, the various organs and parts of the body are furnished with a minimum motive force, with the result, as in this case, that the muscles of the stomach, lacking sufficient supply to per-

form their work, the food put into the stomach was improperly digested.

Another interesting illustration of the effect of motion is that of a girl attending the high school, who complained that the calisthenics affected her heart. The teachers ridiculed such a statement, claiming that the swinging of Indian clubs was healthful and beneficial in the development of the body. They did not know that if the motion of the clubs and arms of 400 or more students was not properly received by the eyes a disturbance of the brain in the visual centers would result, and the centers that control the heart or other centers would be also affected. Carsickness would be thus also explained. Motion of bodies as well as motion of light are disturbing factors, with far-reaching effect and immense variation.

What Is Disease

"Disease is only perverted function." Removal of the cause of irritation will re-establish normal function of the nervous system. The most common symptoms of muscular imbalance is pain at the base of brain (visual centers), dizziness, headache, stomach disturbance, irritability and sleeplessness. The tilting of the head toward the shoulder is one of nature's efforts to bring the eyes into a horizontal plane. One eyebrow raised and the other lowered is an effort of the same kind. It is a matter of frequent experience that those who complain of eyestrain with slight errors of refraction, and often with normal vision, the trouble is in the vertical muscles, and the relief often obtained is to be found in the support given to these muscles by lenses. The satisfactory results from exercise of the muscles are proof that we are proceeding in the right direction, and also an indication that the effect is of an electro-chemical nature. I am firmly convinced that the so-called eyestrain is more often a complex retinal disturbance due to imbalance of the extrinsic muscles than a ciliary muscle strain. On this ground also I would explain the correction of strabismus by lenses.

That there is a wide field for good in the relief of suffering from nervousness is in no doubt. That the progressive optometrist may become the distributor of this good is my sincere hope.

